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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/726,380	12/01/2000	Toshiaki Okuno	50212-168	1261

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EXAMINER	
PHAN, HANH	
ART UNIT	**PAPER NUMBER**
2633	12

DATE MAILED: 07/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/726,380	OKUNO	
	Examiner	Art Unit	
	Hanh Phan	2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 December 2000*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *2,3 and 6* is/are allowed.

6)☒ Claim(s) *1, 4 and 5* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is responsive to the Amendment filed on 12/11/2003.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 4 and 5 are rejected under 35 U.S.C. 102(e) as being anticipated by Jones et al (US Patent No. 6,229,935).

Regarding claim 1, referring to Figures 2-5, Jones discloses an optical communication system (i.e., a wavelength division multiplex system, Figure 2, col. 2, lines 56-67) comprising an optical transmission line (i.e., optical fiber transmission line 12, Fig. 2) disposed between a transmitting end (i.e., optical transmitter 10, Fig. 2) and a receiving end (inherently, there is a receiving end in the wavelength division multiplex system of Jones, see col. 3, lines 9-13 and 60-67 and col. 4, lines 1-2, Fig. 2) for transmitting signals of plural channels, and one or more nodes (i.e., a branching unit 18 in the form of a wavelength add/drop multiplexer ADM, Fig. 2, col. 2, lines 59-67) each arranged at a predetermined position of the optical transmission line (Fig. 2) and adding signals of a predetermined channel (i.e., shortest wavelength λs or longest wavelength

λL, Figs. 2-5) to the optical transmission line (as indicated in Fig. 2, the branching unit 18 is arranged to route a signal carried by a specific wavelength, for example shortest wavelength λs or longest wavelength λL, from the trunk onto a drop fiber 20 for onward transmission by a receiver 24, Figs. 3-5, at the end of the branch and to introduce to the trunk a signal carried by the same wavelength, for example shortest wavelength λs or longest wavelength λL, from a transmitter 26, Figs. 3-5, at the end of the branch which signal wavelength is provided on the add fiber 22, see col. 2, lines 57-67, col. 3, lines 13-15 and 43-67, col. 4, lines 1-2 and lines 60-62 and col. 6, lines 12-15),

wherein among signal channels (i.e., shortest wavelength λs and longest wavelength λL) which can be added to the optical transmission line (Figs. 2-5), each of said nodes (i.e., a branching unit 18, Fig. 2) adds signals of a signal channel (i.e., shortest wavelength λs or longest wavelength λL) at which an absolute value of previously calculated accumulated-dispersion from said node itself (i.e., branching unit 18) to the receiving end becomes smallest, to the optical transmission line (as indicated in Fig. 2, the shortest wavelength channel λs is dropped out of the spectrum in the trunk and detected in the spur. The add channel, at the same as the drop, is pre-dispersed such that the cumulative dispersion at the output of the branching unit 18 is the same magnitude but opposite sign of dispersion when compared to the drop channel immediately before the branching unit 18. After transmission through an equal length of line, the shortest wavelength channel is now dispersed the same amount as the center channel and so will be perfectly compensated at the receiver. This is best illustrated by looking at the TABLE 1 and TABLE 2. In the TABLE 1, the absolute value

of previously calculated accumulated-dispersion from the node (i.e., branching unit 18) to the receiving end to the transmission line is 840 (differential dispersion). In the TABLE 2, after the adds signals of a signal channel (i.e., shortest wavelength λs is pre-dispersed), the absolute value of calculated accumulated-dispersion from the node (i.e., branching unit 18) to the receiving end to the transmission line is 560 (differential dispersion). Jones suggests that in a system with more than one branching unit 18, we would then add/drop the longest wavelength channel and repeat the procedure to minimize the differential dispersion, see col. 3, lines 43-67 and col. 4, lines 1-2 and 60-63 and TABLE 1 and 2).

Regarding claim 4, Jones further teaches a dispersion compensator (16)(Fig. 2) arranged at a predetermined position of the optical transmission line (col. 6, lines 9-11).

Regarding claim 5, referring to Figures 2-5, Jones teaches a method of assigning signal channels (i.e., shortest wavelength λs and longest wavelength λL) which assigns a predetermined signal channel to be added to an optical transmission line (i.e., optical transmission line 12, Fig. 2) to each of nodes (i.e., a branching unit 18 in the form of a wavelength add/drop multiplexer ADM, Fig. 2) in an optical communication system, the optical communication system comprising: the optical transmission line (i.e., optical transmission line 12, Fig. 2) disposed between a transmitting end (i.e., optical transmitter 10, Fig. 2) and a receiving end (inherently, there is a receiving end in the wavelength division multiplex system of Jones, see col. 3, lines 9-13 and 60-67 and col. 4, lines 1-2, Fig. 2) and transmitting signals of plural channels; and one or more nodes (i.e., a branching unit 18, Fig. 2) each arranged at a predetermined position of the

optical transmission line (Fig. 2) and adding signals of a predetermined channel (i.e., shortest wavelength λs or longest wavelength λL, Figs. 2-5) to the optical transmission line (as indicated in Fig. 2, the branching unit 18 is arranged to route a signal carried by a specific wavelength, for example shortest wavelength λs or longest wavelength λL, from the trunk onto a drop fiber 20 for onward transmission by a receiver 24, Figs. 3-5, at the end of the branch and to introduce to the trunk a signal carried by the same wavelength, for example shortest wavelength λs or longest wavelength λL, from a transmitter 26, Figs. 3-5, at the end of the branch which signal wavelength is provided on the add fiber 22, see col. 2, lines 57-67, col. 3, lines 13-15 and 43-67, col. 4, lines 1-2 and lines 60-62 and col. 6, lines 12-15),

wherein to each of said nodes (i.e., branching unit 18, Fig. 2), among signal channels (i.e., shortest wavelength λs and longest wavelength λL) which can be added to the optical transmission line, a signal channel (i.e., shortest wavelength λs or longest wavelength λL) at which an absolute value of previously calculated accumulated-dispersion from the node itself to the receiving end becomes smallest is assigned (as indicated in Fig. 2, the shortest wavelength channel λs is dropped out of the spectrum in the trunk and detected in the spur. The add channel, at the same as the drop, is pre-dispersed such that the cumulative dispersion at the output of the branching unit 18 is the same magnitude but opposite sign of dispersion when compared to the drop channel immediately before the branching unit 18. After transmission through an equal length of line, the shortest wavelength channel is now dispersed the same amount as the center channel and so will be perfectly compensated at the receiver. This is best

illustrated by looking at the TABLE 1 and TABLE 2. In the TABLE 1, the absolute value of previously calculated accumulated-dispersion from the node (i.e., branching unit 18) to the receiving end is 840 (differential dispersion). In the TABLE 2, after the adds signals of a signal channel (i.e., shortest wavelength λs is pre-dispersed), the absolute value of calculated accumulated-dispersion from the node (i.e., branching unit 18) to the receiving end is 560 (differential dispersion). Jones suggests that in a system with more than one branching unit 18, we would then add/drop the longest wavelength channel and repeat the procedure to minimize the differential dispersion, see col. 3, lines 43-67 and col. 4, lines 1-2 and 60-63 and TABLE 1 and 2).

Allowable Subject Matter

4. Claims 2, 3 and 6 are allowed.

5. The following is a statement of reasons for the indication of allowable subject matter:

With respect to claim 2, the prior art of record fails to teach an optical communication system recited in claim 1 wherein each of said nodes includes a node control system which specifies signal channels which can be added to the optical transmission line, and among said specified signal channels, assigns a signal channel at which the absolute value of accumulated-dispersion from said associated node to said receiving end becomes smallest, to said associated node.

With respect to claims 3 and 6, the prior art of record fails to teach an optical communication system recited in claims 1 and 5 wherein further comprising a centralized control system which calculates wavelength dependency of accumulated-dispersion up to said receiving end for each of said nodes, and assigns optimum signal channels to said nodes in descending order of the absolute value of the accumulated-dispersion, wherein said centralized control system specifies signal channels which can be added to said optical transmission line for every node selected as an assignment object, and among said specified signal channels, assigns a signal channel at which the absolute of the accumulated-dispersion from said selected node itself to said receiving end becomes smallest, to said selected node.

Response to Arguments

6. Applicant's arguments filed 12/11/2003 have been fully considered but they are not persuasive.

The applicant's arguments to claims 1, 4 and 5 are not persuasive. The applicant argues that the cited reference (Jones et al) fails to teach the limitation of "**wherein among signal channels which can be added to the optical transmission line, each of said nodes adds signals of a signal channel at which an absolute value of previously calculated accumulated-dispersion from said node itself to the receiving end becomes smallest, to the optical transmission line**" in the independent claims 1 and 5. The examiner respectfully disagrees. Referring to Figures 2-5, Jones et al teaches wherein among signal channels (i.e., shortest wavelength λs

and longest wavelength λL) which can be added to the optical transmission line, each of the nodes (i.e., a branching unit 18, Fig. 2) adds signals of a signal channel (i.e., shortest wavelength λs or longest wavelength λL) at which an absolute value of previously calculated accumulated-dispersion from the node itself (i.e., branching unit 18) to the receiving end becomes smallest, to the optical transmission line (as indicated in Fig. 2, the shortest wavelength channel λs is dropped out of the spectrum in the trunk and detected in the spur. The add channel, at the same as the drop, is pre-dispersed such that the cumulative dispersion at the output of the branching unit 18 is the same magnitude but opposite sign of dispersion when compared to the drop channel immediately before the branching unit 18. After transmission through an equal length of line, the shortest wavelength channel is now dispersed the same amount as the center channel and so will be perfectly compensated at the receiver. This is best illustrated by looking at the TABLE 1 and TABLE 2. In the TABLE 1, the absolute value of previously calculated accumulated-dispersion from the node (i.e., branching unit 18) to the receiving end to the transmission line is 840 (differential dispersion). In the TABLE 2, after the adds signals of a signal channel (i.e., shortest wavelength λs is pre-dispersed), the absolute value of calculated accumulated-dispersion from the node (i.e., branching unit 18) to the receiving end to the transmission line is 560 (differential dispersion). Moreover, Jones suggests that in a system with more than one branching unit 18, we would then add/drop the longest wavelength channel and repeat the procedure to minimize the differential dispersion, see col. 3, lines 43-67 and col. 4, lines 1-2 and 60-63 and TABLE 1 and 2).

Therefore, it is believed that the limitations of claims 1, 4 and 5 are still met by Jones et al and the rejection is still maintained.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hanh Phan whose telephone number is (703)306-5840.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan, can be reached on (703)305-4729. The fax phone number for the organization where this application or proceeding is assigned is (703)872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-4700.

Hanh Phan

07/22/2004